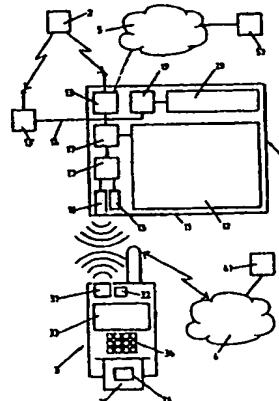


# PARTIAL TRANSLATION



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<p>(54) Title: <b>DISPLAY DEVICE FOR DISPLAYING RECEIVED INFORMATION AND FOR TRANSMITTING RECEIVED DIGITAL DATA TO EXTERNAL MOBILE APPARATUSES AND CORRESPONDING REQUEST METHOD</b></p> <p>(54) Bezeichnung: <b>ANZEIGEVORRICHTUNG ZUR ANZEIGE VON EMPFANGENEN INFORMATIONEN UND ZUM SENDEN DER EMPFANGENEN DIGITALEN DATEN AN EXTERNE MOBILGERÄTE UND ENTSPRECHENDES BESTELVERFAHREN</b></p> <p>(57) Abstract</p> <p>The invention relates to a display device (1) comprising a display panel (12) whose dimensions are such that information displayed thereon can be read by viewers even from a distance of several meters, a data receiving module (13, 13') such as a radio receiver or television receiver, for receiving, for example, program-accompanying digital data which can be displayed on said display panel (12), and at least one non-contact interface, for example a reel and/or infrared transmitter/receiver via which some of the received digital data can be transmitted to external, portable, personal mobile apparatuses (3), such as mobile telephones (3), which are not connected to the display device (1). The invention also relates to a request method according to which the digital data received by the display device (1) and transmitted to the mobile apparatus (3), whereby at least some of the data comprise an identification of a service centre (41) and a product or service identification, serve as a basis for a request which is initiated by the user of the mobile apparatus (3) by means of the operating elements (34) of same and transmitted to a service centre (41) by way of short messages via a mobile telephone network (4).</p> <p>(57) Zusammenfassung</p> <p>Anzeigevorrichtung (1) umfassend eine Anzeigetafel (12), die so dimensioniert ist, dass darauf angezeigte Informationen von Benutzern noch aus einer Distanz von mehreren Metern gelesen werden können, sowie ein Datenempfangsmodul (13, 13'), beispielsweise ein Radioempfänger oder ein Fernsehempfänger, zum Empfang von, beispielsweise programmbegleitenden, digitalen Daten, welche auf der genannten Anzeigetafel (12) angezeigt werden können, und mindestens eine kontaktlose Schnittstelle, zum Beispiel eine Spule und/oder ein Infrarotsender/-Empfänger, über welche gewisse der Empfangenen digitalen Daten auf externe, nicht mit der Anzeigevorrichtung (1) verbundene, tragbare, persönliche Mobilgeräte (3), zum Beispiel Mobilfunktelefone (3), übertragen werden können. Bestellverfahren, in welchem die von der Anzeigevorrichtung (1) empfangenen und an das Mobilgerät (3) übermittelten digitalen Daten, von welchen mindestens gewisse eine Identifikation eines Dienstleistungszentrums (41) sowie eine Produkte- oder Dienstleistungsidentifikation umfassen, als Grundlage für eine Bestellung dienen, welche vom Benutzer des Mobilgeräts (3) mittels dessen Bedienungselementen (34) initiiert und mittels Kurzmeldungen über ein Mobilfunknetz (4) an ein Dienstleistungszentrum (41) gesendet werden.</p>		



The example below relates to a radio transmitter 2 as a data transmitter 2 and, correspondingly, to a radio receiver 13, 13' for receiving programme-associated data from radio programmes broadcast by this radio transmitter 2. However, by way of introduction, it is 5 straightaway necessary to record the fact that the invention can also be applied to other combinations: invention can also be applied to other combinations:

- Broadcast of television programmes with programme-associated data, for example Teletext information, by a 10 television transmitter 2, said data being able to be received by an appropriate television receiver 13, 13' and, by way of example, displayed on a television screen 12, for example a conventional electronic 15 picture tube or an LCD or plasma display.

- Broadcast of short messages, for example SMS short messages or USSD data, or of broadcast messages over a 20 mobile radio network 5, for example a GSM or UMTS network, by an appropriate transmitter 51, for example a communications server in a service centre 51, and reception of these data by an appropriate mobile radio module 13.

25 - Transmission of digital data by a transmitter 51, for example a communications server in a service centre 51, over a landline network 5, for example the public switched telephone network (PSTN) or the Internet, to an appropriate communications module 13.

30 - Reading of digital data by a reader 13, 13' from a data medium (not shown), for example a chip card, a CD-ROM or a diskette.

35 In the detailed exemplary embodiment, the reference numeral 2 refers to the aforementioned radio transmitter, for example a transmitter associated with a national or local radio station or a transmitter for

covering a geographical region with narrow limits, for example a trade-fair or exhibition ground. The radio transmitter is, by way of example, an FM transmitter which is also able to transmit programme-associated 5 digital data, in particular. The transmission of programme-associated data in addition to the radio programme is used, in particular, in the digital radio system DAB (Digital Audio Broadcasting) or in other radio systems, such as FM-SWIFT or FM-DARC. DAB 10 technology, for example, makes it possible to transmit both radio programmes and programme-associated services (Programme Associated Data, PAD). By way of example, DAB can be used to transmit data in eight addressable channels having a capacity of 150 kbits each, the 15 addressing of these channels allowing data to be transmitted to a separately addressed receiver, to a defined group comprising a plurality of receivers (multicast) or to all receivers (broadcast).

20 As indicated by the two unidirectional arrows coming from the radio transmitter 2, the programme-associated digital data, for example advertising information relating to products and/or services, are transmitted by the transmitter together with any audio programmes 25 and are received by an appropriate radio receiver 13, 13' which is able to receive these programme-associated digital data and to decode them using suitable functions, that is to say the radio receiver 13, 13' is, by way of example, a DAB radio receiver 13, 13' or 30 a radio receiver 13, 13' for receiving programme-associated data on the basis of FM-SWIFT, FM-DARC or on the basis of another method. Depending on the form, the radio receiver 13, 13' also has the ability to recognize the aforementioned addresses for the various 35 data channels and, on the basis of these addresses, to accept or ignore the data they contain.

Such a radio receiver 13, 13' is part of the inventive

display apparatus 1. Depending on the implementation variant, the radio receiver 13 is incorporated into the same housing 11 as the display panel 12, or the radio receiver 13' and the display panel 12 are incorporated 5 in separate housings and are connected via an interface 14, indicated schematically by the dashed line 14. If appropriate, the interface 14 can be produced by means known to the person skilled in the art, for example in the form of a serial or parallel interface, using a 10 fixed or removable cable connection or using a contactless interface.

In one possible embodiment, an audio signal which may have been transmitted and received is forwarded by the 15 radio receiver 13, 13' via an internal connection (indicated schematically) to an amplifier 19, for example an audio-frequency amplifier known to the person skilled in the art, is amplified by the latter, and the amplified electrical signal is applied to one 20 or more loudspeakers 20. As shown in the figure, both the amplifier 19 and the loudspeaker 20 can be incorporated into the housing 11, or the amplifier 19 and/or the loudspeaker 20 can be connected to the radio receiver 13, 13' by means of an external fixed or 25 removable cable connection (not shown).

A connection which is likewise shown schematically is used by the radio receiver 13, 13' to forward the programme-associated digital data received to a 30 processing module 17. If the function of decoding the aforementioned channel addresses is not performed by the radio receiver 13, 13', the processing module 17 is responsible, by way of example, for recognizing the addresses of the various data channels and, on the 35 basis of these addresses, for accepting or ignoring the data they contain.

The programme-associated digital data received are

buffer-stored by the processing module 17 and are passed to the display panel 12 via the schematically shown internal connection for display. The display panel 12 can, by way of example, be an electronic, 5 electromechanical or other display unit known to the person skilled in the art. Depending on the form, display control, that is to say control of how the data are to be shown on the display panel 12, can be undertaken by an appropriately programmed software 10 function in the processing module 17 or by appropriate functions in the display panel 12. By way of example, the same information, for example an advertisement for one or more product(s) and/or services from a particular supplier, can be shown statically on the 15 display panel over a relatively long time, or various information, for example advertisements from various suppliers or a plurality of products and/or services from the same supplier, can be shown alternately using row-by-row or page-by-page scrolling. The processing 20 module 17 comprises, by way of example, a processor and memory means, the memory means being used not only for buffer-storing the programme-associated data received but also for storing programmed processing, communication and control functions. The processing 25 module 17 can be designed and produced by a person skilled in the art, for example using commercially available components.

At least some of the programme-associated digital data 30 received are also forwarded to an electronics module 18 by the processing module 17 via an internal connection (shown schematically). This electronics module 18 comprises an electronic circuit which is designed and produced by the person skilled in the art such that it 35 receives data from the processing module 17 via the internal connection and forwards them as an appropriate analogue or digital signal to a contactless interface for transmission via the latter. The contactless

interface comprises, by way of example, a coil 15 which is used to transmit the data in the form of electromagnetic waves, for example at a frequency of 13.56 MHz or at another frequency, and/or an infrared 5 transmitter 16 which transmits the data in the form of infrared radiation. In the opposite direction, the circuit developed by the person skilled in the art can receive the signals induced into the electrical coil 15 by an external magnetic field from a mobile appliance 3 10 and/or can use the infrared receiver 16 to receive the infrared radiation radiated by an external mobile appliance 3 and can forward it as data to the processing module 17 via the schematically shown internal connection.

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Depending on the implementation variant, the electronics module 18 can contain, by way of example, just one circuit, for a coil or an infrared transceiver, or it can comprise two different circuits, 20 one for the coil and one for the infrared transceiver, or it can contain a shared, combined circuit. The circuits can be implemented, by way of example, in the form of integrated circuits in the electronics module 18. Known circuits for inductive contactless interfaces 25 are, among other things, already used in chip cards and are known by the name CCI (Contactfree Chipcard Interface). Contactless infrared communication is preferably based on a known standard, for example on the IrDA protocol (Infrared Data Association). The 30 commercially available infrared transceiver 16 is either incorporated directly into the housing 11 or is fitted onto the surface of the housing 11. In one variant, the person skilled in the art can also decide to combine the processing module 17 with the 35 electronics module 18.

As illustrated in the figure, the display apparatus 1 can communicate with an external, portable and personal

mobile appliance 3 via the contactless interface. The mobile appliance 3 is, by way of example, a mobile radio telephone 3; however, it may also be another personal, portable apparatus designed and built by a 5 person skilled in the art specifically for the purpose of communicating with the inventive display apparatus 1. The mobile appliance 3 comprises a contactless interface, as described, by way of example, in Patent Application PCT/CH97/00237 in the name of the 10 applicant, which, by way of example, comprises an infrared transceiver 31, incorporated on or into the housing of the mobile appliance 3, or a coil 32 incorporated into the mobile appliance 3, or the mobile appliance 3 comprises a chip card 35, as described in 15 Patent Application PCT/CH98/00036 in the name of the applicant, which is removably connected to the mobile appliance 3 and comprises a coil 36, or the mobile appliance 3 is removably connected to an expansion module (not shown), as described in Patent Application 20 PCT/CH98/00211 in the name of the applicant, which comprises a coil and/or an infrared transceiver.

The maximum communication distance between the display apparatus 1 and the external mobile appliance 3 for 25 direct communication via the contactless interface without using the radio telephone components of the mobile radio telephone 3, for example, depends, by way of example, on the properties of the coils 15, 32, 36, which can be produced, by way of example, by winding a 30 wire or by means of any other suitable technology, and also on the transmission power, which is typically limited by the mobile appliance 3 such that the latter's energy reserves are not overloaded. A range of several metres can be achieved without difficulty, for 35 example, using conventional techniques. It is important to ensure that the housing 11 is not electromagnetically screened at the point at which the coil 15 is located, so that it is possible to set up a

radio link to the external mobile appliance 3. Even in the case of the additional or alternative implementation variant with an infrared transceiver 16, the maximum communication distance depends on the 5 transmission power, which is again limited by the mobile appliance 3 such that its energy reserves are not overloaded. In an embodiment using known techniques and components, the range can easily be several metres. However, with infrared communication, the communication 10 path between the infrared transceivers on the display apparatus 1 and the mobile appliance 3 must be free of obstacles which cannot be passed by the infrared radiation. It should also be mentioned at this point that the communication distance for direct 15 communication via the contactless interface can absolutely also be dependent on the communication direction, which means that the display apparatus 1 radiates signals at a higher power than the mobile appliance 3 and can therefore transmit transmittable 20 data to external mobile appliances 3 over a greater distance than is the case the other way around. Depending on application and communications protocol, this may be thoroughly appropriate.

25 In one variant, the processing module 17 is programmed such that it transmits the buffer-stored programme-associated digital data cyclically, as described above, via the contactless interface, for example, as mentioned previously, at a transmission power which is 30 higher than that of the mobile appliances 3. The data transmitted in this way are received by mobile appliances 3 in the transmission range of the display apparatus 1. In one variant, they are filtered on the basis of user profiles, stored, by way of example, on 35 the chip card 35 removably connected to the mobile appliance 3, by comparing content-specific codes for the programme-associated data received by the mobile appliance 3 with corresponding codes in the user

profiles, for example using appropriately programmed software functions on the chip card 35, for example a SIM card (Subscriber Identity Module). In this way, only those data in which the user is interested, on the 5 basis of his user profiles, or, depending on application, for which he has registered or for which he has paid, are accepted by the mobile appliance 3. By way of example, a user can have a user profile containing codes for a particular group of products 10 and/or services loaded onto his chip card 35, or he can pay for a user profile which allows him to receive certain chargeable information and data using his mobile appliance 3.

15 In one alternative or additional variant, the processing module 17 is programmed such that it transmits particular buffer-stored programme-associated digital data at the specific request of a mobile appliance 3, where, depending on application, the data 20 transmitted in this way can and are permitted to be respectively received by all mobile appliances 3 in the transmission range of the display apparatus 1, or where the data transmitted in this way contain, by way of example, an identification which the relevant mobile 25 appliance 3 uses to recognize that these are the data which it has requested. If necessary for the application, the data can also be transmitted in secure form, for example using the TTP method (Trusted Third Party) or a PTP method (Point-to-Point). To encrypt the 30 data interchange via the contactless interface, between the display apparatus 1 and an external mobile appliance 3, it is alternatively possible to use a DEA, DES, TDES, RSA or ECC security algorithm. If 35 additionally necessary for the application, the user of the mobile appliance 3 can be identified and authenticated using an IMSI (International Mobile Subscriber Identification) or an IDUI (International Debit User Identification) which is stored on the chip

card 35 and, by way of example, is transmitted to the display apparatus 1 via the contactless interface, with the aforementioned TTP method or a similar method being able to be used for authentication.

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Specific data are requested by the user, by way of example, such that the user sees information in which he is interested, for example an advertisement with a number of options, displayed on the display panel 12 of 10 the display apparatus 1. This information can, by way of example, be recommended products and/or services which, by way of example, are provided with an identification number. Alternatively, it is possible for instructions relating to the requests for the 15 displayed information to be given over the loudspeaker 20 of the display apparatus 1. The user of the mobile appliance 3 requests the information by using the control elements 34 on the mobile appliance 3 to enter the identification number, for example, or by following 20 the instructions indicated, resulting in appropriate selection commands being sent to the display apparatus 1 via the contactless interface of the mobile appliance 3. In this case, it may be necessary for this operation to be initiated and terminated using predefined keys on 25 the mobile appliance 3, for example, which, by way of example, start up and end a program responsible for the data request on the chip card 35 of the mobile appliance 3. In the display apparatus 1, the selection commands are, as described above, received via the 30 contactless interface and forwarded to the processing module 17, where they are received and dealt with by programmed communication functions. That is to say that the requested information, for example the appropriate programme-associated digital data, for example 35 information relating to a particular product or service, is, as described above, broadcast by the display apparatus 1 and transmitted to the mobile appliance(s) 3. Appropriate software programs can be

developed by the person skilled in the art for the processing module 17 and for the chip card 35, for example a SIM card.

5 Advantageously, at least some of the programme-associated digital data contain a product or service identification and, by way of example, an identification for a service centre 41 which can be used to process orders for these products and/or  
10 services. It is also possible for the radio transmitter 2 to act as a service centre which can take orders for information, for example, and for programme-associated digital data relating thereto to identify the radio transmitter 2 as a service centre. On the basis of such  
15 programme-associated digital data (with product and/or service identifications) received by the mobile appliance 3 from the display apparatus 1 via the contactless interface, as described, the user of the mobile appliance 3 is able to initiate an order for the  
20 cited products or services. For corresponding data which have been requested by the display apparatus 1 using selection commands and have been received, the order can be initiated, by way of example, by pressing a predefined key among the control elements 32 on the  
25 mobile appliance. If corresponding data for a plurality of products and/or services have been received by the mobile appliance 3, these can be shown on the display unit 33 on the mobile appliance 3, can be browsed and selected using the control elements 34, and for a  
30 selected product or a selected service the order can in turn be initiated using the aforementioned function key, for example. The person skilled in the art will understand that, instead of an order, other predefined software functions can also be started and performed on  
35 the chip card for selected data. After the order has been initiated, said products or service identifications are transmitted using a short message, for example an SMS short message, USSD data or a

similar datagram, via a mobile radio network 4, for example a GSM or UMTS network, to the identified service centre 41 (or 2). To prevent an order from being entered by mistake, it is naturally possible to 5 incorporate additional confirmation steps, which will not be discussed in more detail here. Reception of the programme-associated digital data via the contactless interface and the procedure for order initiation and order processing can be performed, by way of example, 10 by appropriately programmed software functions on the chip card 35, which are developed by the person skilled in the art. The data in short messages are transmitted to and handled in the service centre 41 on the basis of the SICAP method, for example, which has been 15 described, among other things, in EP 689 368, on the basis of a similar method or on the basis of WAP (Wireless Application Protocol). An ordering method for products or information for a mobile radio telephone 3 which can be used here, for example, is described in 20 the patent application in the name of the applicant PCT/CH96/00464.

As has already been indicated, the inventive display apparatus 1 is suitable, by way of example, for 25 displaying and forwarding advertising information relating to products and/or services which can be transmitted by a radio transmitter 2 using programme-associated digital data, and the appropriate ordering method for ordering these products and/or services from 30 a service centre 41 (or 2) using a mobile appliance 3. The actual opportunities for use are virtually unlimited and include, by way of example, display apparatuses on trade-fair and exhibition grounds, in theme parks and shopping centres, at airports and 35 railway stations, in financial centres and market places, or in other locations visited by large crowds.

Not only the possible uses but also, generally, the

possible applications of the present invention are almost boundless and are in no way limited just to the given examples of advertising and ordering products and services. Particularly for information services or

5 access rights to services limited on a local basis, it is also possible, by way of example, to extend the mere ordering to include payment and delivery. By way of example, the display apparatus 1 can be used to advertise an event, for example a sports event or a

10 tourist attraction such as a boat trip or a cable car ride, and the user can use the programme-associated digital data received via the display-apparatus 1 to submit an appropriate order, for one or more tickets, in short messages over a mobile radio network 4, which

15 he can also pay for immediately using a prepaid sum of money stored on the chip card 35. In return, by way of example, the mobile radio network 4 is used to send him an access key for one or more people which is loaded onto the chip card 35. When attending the event, the

20 access key is then transmitted via the contactless interface of the mobile appliance 3 to an external apparatus (not shown), in this case an access control, and access is granted to him accordingly.

25 At this point, it should also be repeated that the option of addressing and filtering programme-associated digital data in various channels makes it possible to use a radio transmitter 2 on a transmission frequency to supply various display apparatuses 1 with various

30 information; this means that, by way of example, a plurality of display apparatuses 1 at various locations can be supplied with information specifically and individually.

35 In one variant, the display apparatus 1 also comprises a transmission module, indicated schematically in the figure as part of the data reception module 13, for transmitting data to a service centre 51 via a landline

network 5, for example the public switched telephone network (PSTN) or the Internet, or via a mobile radio network 5, for example a GSM or UMTS network. This transmission module 13 can be used, by way of example, 5 to transmit data (received via the contactless interface as described above, forwarded to the processing module 17 and received by the latter using appropriate programmed communication functions and forwarded to the transmission module 13) to an external 10 service centre 51 for further handling and/or storage there.

As already mentioned, the data reception module 13, 13' in the inventive display apparatus 1 can be produced 15 not only using a radio receiver 13, 13' for receiving programme-associated digital data, but rather the data reception module 13, 13' can also be a television receiver 13, 13' for receiving programme-associated data, a mobile radio module 13 for receiving and for 20 transmitting digital data over a mobile radio network 5, a communications module 13 for receiving and for transmitting digital data over a landline network 5, or a reader 13, 13' for reading digital data from a data medium. Although not all of the possible combinations 25 are shown explicitly in the figure, it is comprehensible to the person skilled in the art that it can be appropriate in particular applications to combine some of these variants; by way of example, as already mentioned above, it can be appropriate to 30 combine a transmission module 13 for transmitting data over a landline network 5 or a mobile radio network 5 to a service centre 51 with a particular data reception module. In addition, the person skilled in the art can also assume that the various implementation variants of 35 the data reception module 13, 13' have been incorporated, as already described for the radio receiver, into the same housing 11 as the display panel 12, or that these data reception modules and the

display panel 12 have been incorporated into separate housings and are connected via an interface 14 indicated schematically by the dashed line 14.

5 In addition, for the various data reception modules 13, 13', it may also be appropriate to apply any audio signals to one or more loudspeakers 20 via the schematically indicated internal connection via the amplifier 19 described above. However, the person  
10 skilled in the art will know that, depending on the form of the data reception module 13, 13', either the data reception module 13, 13' or the processing module 17, or possibly the amplifier 19, needs to be provided with appropriate components and/or programmed functions  
15 in order to convert digital audio data into an analogue audio signal, for example, or in order to isolate the programme-associated data, the visual signal and the audio signal in the television receiver 13, 13' for example.

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It will also be comprehensible to a person skilled in the art that, depending on the form of the data reception module 13, 13', the processing module 17 and the internal connection (indicated schematically in the figure) between the data reception module 13, 13' and the processing module 17 need to be designed and produced in a correspondingly different manner.

Besides the installation and sale of display  
30 apparatuses 1, it is also possible to load chip cards  
35, for example SIM cards, with the necessary function for carrying out the inventive ordering method and with user profiles chosen by the user, in return for payment. By way of example, it is also possible to hire  
35 out display apparatuses 1 to suppliers of services and/or products and/or to charge a commission for each product or service ordered in this way.